FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Habitat use and survivorship of Sitka black-tailed deer in Southeast Alaska: a regional meta-analysis and synthesis

PRINCIPAL INVESTIGATOR: David K. Person

COOPERATORS: Chris Farmer, Acopian Center for Conservation Learning, Hawk Mountain Sanctuary, 410 Summer Valley Rd, Orwigsburg, PA 17961;

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR: W-33-3

PROJECT NR: 2.13

WORK LOCATION: Southeast Alaska, including Prince of Wales, Mitkof, Admiralty and Heceta Islands

STATE: Alaska

PERIOD: 1 July 2004–30 June 2005

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Meta-analysis of habitat selection by Sitka black-tailed deer.

Collecting, editing, and combining of radiotelemetry data from Admiralty, Mitkof, Prince of Wales, and Heceta Islands has been partially completed. Preliminary analyses of data from Heceta have been completed, and analyses of data from Prince of Wales Island have begun.

OBJECTIVE 2: Meta-analysis of habitat correlates of survivorship for Sitka black-tailed deer.

Collecting, editing, and combining of radiotelemetry data from Admiralty, Mitkof, Prince of Wales, and Heceta Islands has been partially completed. Preliminary analyses of data from Heceta have been completed, and analyses of data from Prince of Wales Island have begun.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB 1: Collect and collate data from contributors.

Please note: This is a progress report and the information contained within may be further analyzed and refined.

Telemetry data from deer research on Prince of Wales, Heceta, and Admiralty Islands have been combined and edited. Data from other studies should be forthcoming. We currently have about 8000 radio locations for deer combined into our master dataset.

JOB 2: Begin data analysis.

Formats for habitat selection and survivorship analyses have been standardized to enable comparisons between study areas. Preliminary habitat selection and survivorship analyses for deer from Heceta Island have been completed. Analysis of data from Prince of Wales Island has begun. Analyses using other datasets are pending.

JOB 3: Collaborations and peer review.

Results of our preliminary analyses of survivorship and mortality of deer on Heceta Island were written up as an individual paper, submitted and accepted (pending revisions) by the Journal of Wildlife Management. Collaborators on that paper were David Person, Chris Farmer, and R. Terry Bowyer.

JOB 4: Technical assistance and presentations.

Results from our analyses of survivorship and mortality data from Heceta Island were presented to the joint Alaska Chapter of The Wildlife Society and Society of American Foresters meeting in Fairbanks Alaska, April 2005. In addition, some results from Heceta Island and preliminary results for deer on Prince of Wales Island were presented to the Prince of Wales Deer Management Working Group sponsored by the U.S. Forest Service, Federal Office of Subsistence Management, and Alaska Department of Fish and Game.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD.

No additional work was done.

IV. PUBLICATIONS

Results of our preliminary analyses of survivorship and mortality of deer on Heceta Island were written up as an individual paper, submitted and accepted (pending revisions) by the Journal of Wildlife Management. Collaborators on that paper were David Person, Chris Farmer, and R. Terry Bowyer. Data formatting and methods of analyses used in that paper will serve as the standards for analyses of other datasets in this project.

Farmer, C. J, D. K. Person, and R. T. Bowyer. In review. Risk factors and mortality of black-tailed deer in a managed forest landscape. Journal of Wildlife Management.

V. RECOMMENDATIONS FOR THIS PROJECT

No changes are recommended.

VI. APPENDIX

Farmer, C. J, D. K. Person, and R. T. Bowyer. In review. Risk factors and mortality of black-tailed deer in a managed forest landscape. Journal of Wildlife Management.

Abstract: Few studies of habitat selection by cervids relate habitat use to risk factors affecting survivorship, and none examine those relations at multiple scales. We investigated the influence of habitat use on risk of death of Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) on Heceta Island in Southeast Alaska, USA. Much of the island was covered by a mosaic of even and uneven-aged forest habitats that provided a model setting in which to assess the relation between habitat use and mortality of deer. We radio-collared and monitored 51 adult females, 11 adult males, and 19 young of the year. Risk of death was compared with habitat composition, habitat distribution, topography, distances to features such as roads, and functional habitat characteristics such as seasonal forage biomass within 50, 500, and 1,000-m circular buffers around relocations of deer. Those buffers encompassed habitats used at scales of radio locations, home ranges, and landscapes. We addressed hypotheses that related habitat composition and distribution to risks of death from malnutrition, predation, and hunting. Predation by wolves (*Canis lupus*) and malnutrition were the principal causes of death of adult females and young, whereas hunters killed most adult males. Mortality of adult females and young was most affected by habitat factors acting at scales of landscapes and home ranges, whereas that of adult males was most affected by habitat factors in the immediate vicinity of radio relocations. Higher risk of death from causes related to malnutrition was related to use and patch size of pole-stage, second-growth forest; a forage-poor habitat. Use of pre-commercially thinned second growth increased risk of death for young. Use of level terrain was the most influential factor increasing risk of predation at all scales. Open habitats such as muskegs and young clearcuts also increased that risk. Use of shrub-sapling stage clearcuts in landscapes accessible by roads increased risk of death from hunting. Our results indicated that specific habitats and their landscape context were important factors influencing mortality of deer.

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Key words: black-tailed deer, proportional hazards model, forest management, habitat use, *Odocoileus hemionus*, scale, survivorship, mortality, temperate rainforest

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VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

Stewardship Investment items purchased: none

Total Costs

FEDERAL AID SHARE $51.8 STATE SHARE $17.2 = TOTAL $69.0

VIII. PREPARED BY:

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SUBMITTED BY:

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